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SEQUENCE LISTING

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<120> METHOD FOR IDENTIFYING GENES INVOLVED IN CELL PROLIFERATION

<130> 701039-50920

<140> 09/758,007
<141> 2001-01-10

<160> 3

<170> PatentIn version 3.1

<210> 1
<211> 903
<212> PRT
<213> Danio rerio

<400> 1

Met Pro Pro Lys Lys Arg Ser Ser Gly Thr Pro Gln Lys Lys Glu Leu
1 5 10 15

Lys Gly Ser Leu Lys Ser Arg Ser Pro Asp Ser Gly Asp Asn Ala Val
20 25 30

Leu Ser Pro Glu Arg His Lys Asp Lys Asp Pro Glu Phe Val Phe Leu
35 40 45

Ser Glu Glu Leu Gln Ser Thr Asn Ser Ile Cys Asp His Ala Trp Arg
50 55 60

Ile Trp Glu Arg Glu Ile Arg Ser Met Asp Lys Thr Asn Met Pro Tyr
65 70 75 80

Ser Asn Arg Gln Gln Trp Gly Ala Cys Leu Phe Ile Ala Gly Met Glu
85 90 95

Leu Glu Gly Ile Asn Leu Thr Phe Thr Gln Phe Leu Lys Ala Val Gly
100 105 110

Leu Ser Val Lys Gln Phe Ile Ser Leu Val Arg Lys Met Asp Val Asn
115 120 125

Val Asp Thr Ile Ser Pro Lys Val Asn Ser Ala Val Thr Arg Leu Glu

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    130                 135                 140

Asn Lys Tyr Asp Val Thr Leu Ala Leu Tyr Gln Arg Phe Val Lys Thr
145                 150                 155                 160

Cys Glu Lys Ile Phe Ala Glu Pro Asp Asn Ala Lys Arg Lys Glu Leu
                165                 170                 175

Trp Glu Ser Ser Trp Thr Met Phe Leu Leu Ala Lys Gly Thr Phe Leu
            180                 185                 190

Gln Met Glu Asp Asp Leu Val Ile Ser Phe Gln Leu Leu Leu Cys Val
        195                 200                 205

Leu Glu Phe Phe Ala Lys Arg Leu Ser Pro Ser Leu Leu Gln Ser Pro
    210                 215                 220

Tyr Asn Ser Val Val Ser Ser Ser Thr Leu Ser Pro Pro Thr Arg Thr
225                 230                 235                 240

Ser Arg Arg Asn Gln Gly Lys Ser Lys Pro Arg Pro Ala Glu Met Asp
                245                 250                 255

Met Gln Leu Leu Glu Thr Leu Cys Lys Glu Gly Asp Cys Ser Val Asp
            260                 265                 270

Glu Val Lys Asn Val Tyr Gln Ser Thr Phe Cys Ala Phe Leu Asp Ser
        275                 280                 285

Val Gly Leu Leu Gly Leu Gln Gly Leu Pro Pro Met Glu Ala Leu Ser
    290                 295                 300

Lys Gln Tyr Glu Glu Leu Tyr His Lys Ser Lys Asp Phe Asp Ala Arg
305                 310                 315                 320

Leu Phe Leu Ser Asp Asp Glu Thr Leu Ser Pro Asn Lys Ile Glu Val
                325                 330                 335

Ser Lys Val Glu Val Thr Pro Arg Lys Asn Leu Phe Ala Glu Asp Ile
            340                 345                 350

Ala Ile Pro Val Pro Gln Thr Pro Ile Arg Ala Ala Met Thr Ser Ile
        355                 360                 365
```

Gln Gln Leu Arg Gly Asp Leu Thr Ser Gly Ser Asp Gln Pro Ser Ser
370 375 380

Asn Leu Leu Val Tyr Tyr Lys Asn Cys Thr Val Asp Pro Ser Gly Glu
385 390 395 400

Ile Lys Lys Arg Val Glu Glu Leu Gly Glu Val Phe Ile Gln Arg Phe
405 410 415

Ala Gln Ala Val Gly Gln His Cys Glu Gly Leu Gly Arg Lys Arg Phe
420 425 430

Tyr Leu Gly Ala Gln Leu Tyr Tyr Lys Val Met Glu Ser Met Leu Lys
435 440 445

Ser Glu Glu Lys Arg Leu Ser Val Gln Asn Phe Ser Lys Leu Leu Asn
450 455 460

Asn Ala Ala Phe His Thr Ser Leu Leu Ala Cys Ala Leu Glu Val Val
465 470 475 480

Ile Ala Thr Tyr Val Gly Ser Ser Leu Lys Asn Gly Gly Phe Gly Arg
485 490 495

Ser Ser Gly Ala Ser Asp Ser Val Glu Ser Asp Leu Cys Phe Pro Trp
500 505 510

Ile Leu Ser Val Phe Gln Leu Pro Ala Phe Asp Phe Tyr Lys Val Ile
515 520 525

Glu Ser Phe Ile Lys Ala Glu Pro Thr Leu Lys His Asp Met Val Lys
530 535 540

His Leu Glu Gln Cys Glu His Val Ile Met Glu Ser Leu Ala Trp Arg
545 550 555 560

Ala Asp Ser Pro Leu Phe Asp Leu Leu Lys Gln Ser Arg Glu Glu Gly
565 570 575

Pro Gly Glu Gln Ala Glu Pro Pro Ala Thr Leu Asn Gln Pro Leu His
580 585 590

```
His Asn His Thr Ala Ala Asp Leu Tyr Leu Ser Pro Val Arg Pro Cys
        595                 600                 605

Arg Gln Pro Pro Val Met Glu Ala Glu Pro Pro Thr Pro Gly Thr Arg
    610                 615                 620

Ala Pro Arg Ser Asn Ser Leu Ser Leu Phe Tyr Lys Lys Leu Tyr Arg
625                 630                 635                 640

Met Ala Tyr Leu Arg Leu Lys Met Leu Phe Ser Asn Leu Leu Thr Ser
                645                 650                 655

His Pro Glu Met Glu Pro Ile Ile Trp Thr Leu Leu Gln His Thr Leu
            660                 665                 670

Gln Asn Glu Tyr Glu Leu Met Arg Asp Arg His Leu Asp Gln Leu Ile
        675                 680                 685

Met Ser Ala Met Tyr Ala Ile Cys Lys Val Lys Asn Val Asp Leu Arg
    690                 695                 700

Phe Lys Thr Ile Val Thr Ala Tyr Lys Glu Leu Pro Asn Thr Asn Gln
705                 710                 715                 720

Glu Thr Phe Lys Arg Val Leu Ile Arg Glu Gly Gln Tyr Asp Ser Ile
                725                 730                 735

Ile Val Phe Tyr Asn Leu Val Phe Met Gln Lys Leu Lys Thr Asn Ile
            740                 745                 750

Leu Gln Tyr Ser Ser Pro Arg Pro Pro Pro Leu Ser Pro Ile Pro His
        755                 760                 765

Ile Pro Cys Ser Pro Tyr Lys Asn Ser Pro Leu Arg Val Pro Gly Ser
    770                 775                 780

Asn Asn Val Tyr Val Ser Pro Leu Lys Ser Ser Arg Val Ser Pro Leu
785                 790                 795                 800

Val Met Thr Pro Arg Ser Arg Ile Leu Ile Ser Ile Gly Glu Ser Phe
                805                 810                 815
```

Gly Ser Ala Asp Lys Phe Gln Lys Ile Asn Gln Met Val Ser Ser Ser
820 825 830

Asp Trp Ser Leu Lys Arg Ser Leu Asp Gly Gly Ser Ala Pro Lys Pro
835 840 845

Leu Lys Arg Leu Arg Phe Asp Met Asp Gly Gln Asp Glu Ala Asp Gly
850 855 860

Ser Lys Ser Ser Gly Glu Ser Ala Leu Ile Gln Lys Leu Ala Glu Met
865 870 875 880

Ser Ser Thr Arg Ser Arg Met Gln Glu Gln Lys Leu Lys Glu Glu Ser
885 890 895

Asp Lys Asp His Pro Glu Pro
900

<210> 2
<211> 899
<212> PRT
<213> Xenopus

<400> 2

Met Pro Pro Lys Ser Pro Arg Lys Gln Gln Ile Arg Ser Gln Gly Glu
1 5 10 15

Pro Arg Ser Pro Asp Arg Pro Asp Phe Gln Asp Pro Asp Phe Asn Phe
20 25 30

Leu Cys Glu Asn Leu Lys Ile Ser Asp Asn Val Arg Gly Lys Ala Trp
35 40 45

Asn Thr Tyr Glu Lys Met Phe Pro Ser Gly Tyr Met Met Arg Glu Thr
50 55 60

Ala Lys Lys Lys Glu Ser Leu Gly Leu Cys Leu Tyr Ile Ala Ser Val
65 70 75 80

Asp Cys Glu Glu Met Thr Phe Thr Phe Thr Glu Leu Leu Lys Ile Leu
85 90 95

Arg Leu Ser Val Asn Arg Cys Phe Arg Leu Leu Arg Glu Met Asp Ile
100 105 110

```
Asn Met Asp Val Leu Ser Asn Lys Val Asp Asn Ala Ile Ser Lys Leu
        115                 120                 125

Lys Lys Lys Tyr Glu Asn Met Cys Leu Leu Phe Gln Lys Phe Gln Arg
    130                 135                 140

Thr Phe Glu Leu Ile Phe Glu Glu Gln His Asn Thr Arg Ala Ala Val
145                 150                 155                 160

Asp Thr Ala Pro Ile Leu Lys Gly Thr Trp Ile Thr Phe Leu Leu Ala
                165                 170                 175

Arg Gly Lys Ile Leu Gln Met Asp Asp Glu Leu Val Ile Ser Ser Gln
            180                 185                 190

Leu Leu Leu Cys Val Leu Asp Tyr Phe Ile Lys Leu Ser Pro Pro Ser
        195                 200                 205

Ile Leu Lys Glu Pro Tyr Lys Ser Ala Leu Asn Gly Leu Pro Val Asn
    210                 215                 220

Thr Pro Pro Arg Ser Ser Arg Arg Ser Gln Asn Arg Asn Thr Arg Val
225                 230                 235                 240

Ser Pro Gln Ser Glu Thr Asp Ser Lys Val Leu Glu Phe Leu Cys Ser
                245                 250                 255

Gln Asn Tyr Cys Pro Met Asp Glu Val Arg Asn Val Tyr Ser Thr Ser
            260                 265                 270

Phe Val Asp Phe Leu Ala Ser Ala Gly Ile Ser Ser Asn Glu Gly Ile
        275                 280                 285

Pro Lys Val Glu Ser Ile Ser Arg Gln Tyr Glu Glu Leu Tyr His Lys
    290                 295                 300

His Lys Asp Leu Asp Ala Arg Leu Phe Leu Glu Asn Asp Glu Thr Leu
305                 310                 315                 320

Lys Val Asp Val Gln Asp Ser Leu Asp Leu Glu Arg Thr Pro Arg Lys
                325                 330                 335
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```
Asp Glu Ser Glu Val Phe Pro Val Pro Pro Gln Thr Pro Val Arg Gly
            340                 345                 350

Ala Met Asn Thr Val Gln Gln Leu Met Val Thr Leu Ser Ser Ala Asn
        355                 360                 365

Asp Lys Pro Pro Asp Thr Leu Asp Ser Tyr Phe Ser Asn Cys Thr Val
    370                 375                 380

Asn Pro Lys Thr Lys Ile Thr Asp Arg Ile Glu His Phe Gly His Val
385                 390                 395                 400

Phe Lys Glu Lys Phe Ala Ser Ser Val Gly Gln Ala Cys Ala Glu Ile
                405                 410                 415

Gly Tyr Gln Arg Tyr Lys Leu Gly Val Cys Leu Tyr Tyr Arg Val Met
            420                 425                 430

Glu Ala Ile Leu Lys Thr Glu Glu Glu Arg Leu Ser Val His Asn Phe
        435                 440                 445

Ser Lys Leu Leu Asn Asn Asp Ile Phe His Ile Cys Leu Leu Ala Cys
    450                 455                 460

Ala Val Glu Val Val Val Ala Ser Tyr Ala Arg Asn Ala Ser Gln Ala
465                 470                 475                 480

Tyr Cys Ser Ser Gly Thr Asn Leu Ser Phe Pro Trp Ile Leu Arg Ala
                485                 490                 495

Phe Glu Ile Lys Ala Phe Asp Phe Tyr Lys Val Ile Glu Cys Phe Ile
            500                 505                 510

Lys Ala Glu Pro Ser Leu Thr Ser Asn Met Ile Lys Tyr Leu Glu Arg
        515                 520                 525

Cys Glu His Gln Ile Met Glu Cys Leu Ala Trp Gln Ser Asp Ser Pro
    530                 535                 540

Leu Phe Asp Leu Ile Lys Gln Thr Arg Glu Arg Glu Gly Leu Val Asp
545                 550                 555                 560
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```
His Pro Glu Leu Val Ser Asn Leu Gln Gln Pro Val Gln His Asn His
                565                 570                 575

Thr Ala Ala Asp Leu Tyr Leu Ser Pro Ser Arg Ser Ser His Gln His
            580                 585                 590

Pro Val Thr Ser Val Pro Thr Ser Ser Val Thr Asn Gly Gln Val Ser
        595                 600                 605

Ser Ser Gln Pro Val Gln Gln Lys Ser Thr Ser Leu Ser Leu Phe Tyr
    610                 615                 620

Lys Lys Val Tyr Leu Leu Ala Tyr Lys Arg Leu Ser Ser Leu Cys Ser
625                 630                 635                 640

Ser Leu Leu Ser Asp His Pro Glu Leu Glu Gln Val Ile Trp Thr Leu
                645                 650                 655

Leu Gln His Thr Leu Gln Gln Glu Tyr Glu Leu Met Arg Asp Arg His
            660                 665                 670

Leu Asp Gln Ile Met Met Cys Ser Met Tyr Gly Ile Cys Lys Ala Lys
        675                 680                 685

Asn Ile Asp Leu Arg Phe Lys Thr Ile Val Thr Ala Tyr Lys Gly Leu
    690                 695                 700

Thr Asn Thr Asn Gln Glu Thr Phe Lys His Val Leu Ile Arg Asp Gly
705                 710                 715                 720

Gln His Asp Ser Ile Ile Val Phe Tyr Asn Leu Val Phe Met Gln Lys
                725                 730                 735

Leu Lys Ser His Ile Leu Gln Tyr Gly Ser Ala Arg His Pro Thr Leu
            740                 745                 750

Ser Pro Ile Pro His Ile Pro Arg Ser Pro Tyr Arg Phe Gly Asn Ser
        755                 760                 765

Pro Lys Val Pro Gly Asn Ile Tyr Val Ser Pro Leu Lys Thr Pro Tyr
    770                 775                 780

Lys Thr Ala Asp Gly Leu Leu Ser Pro Ser Lys Met Thr Pro Lys Thr
```

785 790 795 800

Ser Phe Leu Ile Ser Leu Gly Glu Thr Phe Arg Ser Pro Asp Arg Phe
805 810 815

Gln Lys Ile Asn Gln Met Leu Asn Ser Cys Glu Arg Pro Ile Lys Arg
820 825 830

Ser Ala Asp Thr Gly Thr Thr Pro Lys Pro Leu Lys Lys Leu Arg Phe
835 840 845

Asp Ser Asp Gly Gln Asp Glu Ala Asp Gly Ser Lys His Ile Gln Gly
850 855 860

Glu Ser Lys Phe Gln Gln Lys Leu Ala Glu Met Thr Ser Thr Arg Thr
865 870 875 880

Arg Met Gln Lys Gln Lys Leu Glu Glu Ser Leu Glu Ser Ser Gln Gln
885 890 895

Glu Glu Lys

<210> 3
<211> 928
<212> PRT
<213> Homo sapiens

<400> 3

Met Pro Pro Lys Thr Pro Arg Lys Thr Ala Ala Thr Ala Ala Ala Ala
1 5 10 15

Ala Ala Glu Pro Pro Ala Pro Pro Pro Pro Pro Pro Pro Glu Glu Asp
20 25 30

Pro Glu Gln Asp Ser Gly Pro Glu Asp Leu Pro Leu Val Arg Leu Glu
35 40 45

Phe Glu Glu Thr Glu Glu Pro Asp Phe Thr Ala Leu Cys Gln Lys Leu
50 55 60

Lys Ile Pro Asp His Val Arg Glu Arg Ala Trp Leu Thr Trp Glu Lys
65 70 75 80

```
Val Ser Ser Val Asp Gly Val Leu Gly Gly Tyr Ile Gln Lys Lys Lys
                85                  90                  95

Glu Leu Trp Gly Ile Cys Ile Phe Ile Ala Arg Val Asp Leu Asp Glu
            100                 105                 110

Met Ser Phe Thr Leu Leu Ser Tyr Arg Lys Thr Tyr Glu Ile Ser Val
        115                 120                 125

His Lys Phe Phe Asn Leu Leu Lys Glu Ile Asp Thr Ser Thr Lys Val
    130                 135                 140

Asp Asn Ala Met Ser Arg Leu Leu Lys Lys Tyr Asp Val Leu Phe Ala
145                 150                 155                 160

Leu Phe Ser Lys Leu Glu Arg Thr Cys Glu Leu Ile Tyr Leu Thr Gln
                165                 170                 175

Pro Ser Ser Ser Ile Ser Thr Glu Ile Asn Ser Ala Leu Val Leu Lys
            180                 185                 190

Val Ser Trp Ile Thr Phe Leu Leu Ala Lys Gly Glu Val Leu Gln Met
        195                 200                 205

Glu Asp Asp Leu Val Ile Ser Phe Gln Leu Met Leu Cys Val Leu Asp
    210                 215                 220

Tyr Phe Ile Lys Leu Ser Pro Pro Met Leu Leu Lys Glu Pro Tyr Lys
225                 230                 235                 240

Thr Ala Val Ile Pro Ile Asn Gly Ser Pro Arg Thr Pro Arg Arg Gly
                245                 250                 255

Gln Asn Arg Ser Ala Arg Ile Ala Lys Gln Leu Glu Asn Asp Thr Arg
            260                 265                 270

Ile Ile Glu Val Leu Cys Lys Glu His Glu Cys Asn Ile Asp Glu Val
        275                 280                 285

Lys Asn Val Tyr Phe Lys Asn Phe Ile Pro Phe Met Asn Ser Leu Gly
    290                 295                 300
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```
Leu Val Thr Ser Asn Gly Leu Pro Glu Val Glu Asn Leu Ser Lys Arg
305                 310                 315                 320

Tyr Glu Glu Ile Tyr Leu Lys Asn Lys Asp Leu Asp Arg Arg Leu Phe
                325                 330                 335

Leu Asp His Asp Lys Thr Leu Gln Thr Asp Ser Ile Asp Ser Phe Glu
            340                 345                 350

Thr Gln Arg Thr Pro Arg Lys Ser Asn Leu Asp Glu Glu Val Asn Ile
        355                 360                 365

Ile Pro Pro His Thr Pro Val Arg Thr Val Met Asn Thr Ile Gln Gln
    370                 375                 380

Leu Met Met Ile Leu Asn Ser Ala Ser Asp Gln Pro Ser Glu Asn Leu
385                 390                 395                 400

Ile Ser Tyr Phe Asn Asn Cys Thr Val Asn Pro Lys Glu Ser Ile Leu
                405                 410                 415

Lys Arg Val Lys Asp Ile Gly Tyr Ile Phe Lys Glu Lys Phe Ala Lys
            420                 425                 430

Ala Val Gly Gln Gly Cys Val Glu Ile Gly Ser Gln Arg Tyr Lys Leu
        435                 440                 445

Gly Val Arg Leu Tyr Tyr Arg Val Met Glu Ser Met Leu Lys Ser Glu
    450                 455                 460

Glu Glu Arg Leu Ser Ile Gln Asn Phe Ser Lys Leu Leu Asn Asp Asn
465                 470                 475                 480

Ile Phe His Met Ser Leu Leu Ala Cys Ala Leu Glu Val Val Met Ala
                485                 490                 495

Thr Tyr Ser Arg Ser Thr Ser Gln Asn Leu Asp Ser Gly Thr Asp Leu
            500                 505                 510

Ser Phe Pro Trp Ile Leu Asn Val Leu Asn Leu Lys Ala Phe Asp Phe
        515                 520                 525

Tyr Lys Val Ile Glu Ser Phe Ile Lys Ala Glu Gly Asn Leu Thr Arg
```

530 535 540

Glu Met Ile Lys His Leu Glu Arg Cys Glu His Arg Ile Met Glu Ser
545 550 555 560

Leu Ala Trp Leu Ser Asp Ser Pro Leu Phe Asp Leu Ile Lys Gln Ser
565 570 575

Lys Asp Arg Glu Gly Pro Thr Asp His Leu Glu Ser Ala Cys Pro Leu
580 585 590

Asn Leu Pro Leu Gln Asn Asn His Thr Ala Ala Asp Met Tyr Leu Ser
595 600 605

Pro Val Arg Ser Pro Lys Lys Lys Gly Ser Thr Thr Arg Val Asn Ser
610 615 620

Thr Ala Asn Ala Glu Thr Gln Ala Thr Ser Ala Phe Gln Thr Gln Lys
625 630 635 640

Pro Leu Lys Ser Thr Ser Leu Ser Leu Phe Tyr Lys Lys Val Tyr Arg
645 650 655

Leu Ala Tyr Leu Arg Leu Asn Thr Leu Cys Glu Arg Leu Leu Ser Glu
660 665 670

His Pro Glu Leu Glu His Ile Ile Trp Thr Leu Phe Gln His Thr Leu
675 680 685

Gln Asn Glu Tyr Glu Leu Met Arg Asp Arg His Leu Asp Gln Ile Met
690 695 700

Met Cys Ser Met Tyr Gly Ile Cys Lys Val Lys Asn Ile Asp Leu Lys
705 710 715 720

Phe Lys Ile Ile Val Thr Ala Tyr Lys Asp Leu Pro His Ala Val Gln
725 730 735

Glu Thr Phe Lys Arg Val Leu Ile Lys Glu Glu Glu Tyr Asp Ser Ile
740 745 750

Ile Val Phe Tyr Asn Ser Val Phe Met Gln Arg Leu Lys Thr Asn Ile
755 760 765

Leu Gln Tyr Ala Ser Thr Arg Pro Pro Thr Leu Ser Pro Ile Pro His
770 775 780

Ile Pro Arg Ser Pro Tyr Lys Phe Pro Ser Ser Pro Leu Arg Ile Pro
785 790 795 800

Gly Gly Asn Ile Tyr Ile Ser Pro Leu Lys Ser Pro Tyr Lys Ile Ser
805 810 815

Glu Gly Leu Pro Thr Pro Thr Lys Met Thr Pro Arg Ser Arg Ile Leu
820 825 830

Val Ser Ile Gly Glu Ser Phe Gly Thr Ser Glu Lys Phe Gln Lys Ile
835 840 845

Asn Gln Met Val Cys Asn Ser Asp Arg Val Leu Lys Arg Ser Ala Glu
850 855 860

Gly Ser Asn Pro Pro Lys Pro Leu Lys Lys Leu Arg Phe Asp Ile Glu
865 870 875 880

Gly Ser Asp Glu Ala Asp Gly Ser Lys His Leu Pro Gly Glu Ser Lys
885 890 895

Phe Gln Gln Lys Leu Ala Glu Met Thr Ser Thr Arg Thr Arg Met Gln
900 905 910

Lys Gln Lys Met Asn Asp Ser Met Asp Thr Ser Asn Lys Glu Glu Lys
915 920 925